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(54) Backlighting device and color display device

(57) To achieve a backlighting device having excellent light utilization, there is provided an edge lighting-type backlight having a light guiding member (3), a high-refractive-index layer (4) formed thereon and having a higher refractive index than the light guiding member (3), and a scattering layer (5) formed on the high-refractive-index layer (4). Light from a light source (1) disposed facing the edge of the light guiding member (3) enters the high-refractive-index layer (4) through the light guiding member (3), and effectively scatters to produce high brightness, and furthermore, to achieve a color display device that eliminates color mixing in a transparent display device for decorative or various display uses, a construction is provided in which on one surface of a light guiding plate (3) there are formed a high-refractive-index layer (4) having a higher refractive index than the light guiding plate (3), a light scattering layer (5), and a low-refractive-index layer having a lower refractive index than the light guiding plate (3), one on top of another in this order, and on top of that structure another light guiding plate is provided, on top of which a high-refractive-index layer and a light scattering layer are likewise formed, while a color filter is disposed on one edge face of each light guiding plate and a light source is disposed near each color filter.

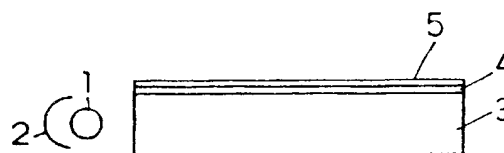


Fig. 1 (b)

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EUROPEAN SEARCH REPORT

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EP 96 11 9456

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A	--- GB 2 259 176 A (SAMSUNG) 3 March 1993 * page 4, line 21 - page 5, line 08; figure 3 *	2	
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
THE HAGUE		26 June 1998	Diot, P
CATEGORY OF CITED DOCUMENTS X particularly relevant if taken alone Y particularly relevant if combined with another document of the same category A technological background O non-written disclosure P intermediate document T theory or principle underlying the invention E earlier patent document, but published on, or after the filing date D document cited in the application L document cited for other reasons & member of the same patent family, corresponding document			

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The present search report has been drawn up for all claims				
Place of search THE HAGUE		Date of completion of the search 26 June 1998	Examiner Diot, P	
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X particularly relevant if taken alone Y particularly relevant if combined with another document of the same category A technological background O non-written disclosure P intermediate document</p> <p>T theory or principle underlying the invention E earlier patent document, but published on, or after the filing date D document cited in the application L document cited for other reasons & member of the same patent family, corresponding document</p>				

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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
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<p>CATEGORY OF CITED DOCUMENTS</p> <p>X particularly relevant if taken alone Y particularly relevant if combined with another document of the same category A technological background O non-written disclosure P intermediate document</p> <p>T theory or principle underlying the invention E earlier patent document, but published on, or after the filing date D document cited in the application L document cited for other reasons & member of the same patent family, corresponding document</p>			

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
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X	EP 0 261 898 A (THORN EMI) 30 March 1988 * column 4, line 13 - line 19 *	27	
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X Y	US 4 235 526 A (BERMAN) 25 November 1980 * column 3, line 35 - column 6, line 34 *	36 37	
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 25 June 1998	Examiner Diot, P
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	



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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s)
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:
- ☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:



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LACK OF UNITY OF INVENTION
SHEET B

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. Claims: 1, 4-6

A backlighting device comprising a light guiding member and a transparent layer having a higher refractive index than said light guiding layer formed on a light emergence surface of said light guiding layer.

2. Claim : 2

A backlighting device comprising a light guiding member and a light emergence surface of said light guiding layer is sloped with an angle of between 87-90 degree.

3. Claim : 3

A backlighting device comprising a light guiding member and a scattering layer formed of two (or more) of materials having different refractive indices mixed in a separated phase.

4. Claims: 7-16

A color display comprising a plurality of light guiding plates, light scattering layer formed on top of each light guiding plate, color elements (filters or light sources) disposed on a edge of each guiding plate.

5. Claims: 17, 18

A color display (CRT) or a LCD positioned near a glass surface, and a polarizer arranged to block or absorb S wave polarization components.

6. Claims: 19-21

A color display having a variable scattering layer, positioned near a glass surface, wherein the display is mounted so that the angle of incidence of the display light on said window becomes equal to the brewster angle.

7. Claims: 22-25

A color display having a variable scattering layer, positioned near a glass surface, wherein the display is mechanically positioned at a first position for displaying images illuminated by ambient light, and a second position

LACK OF UNITY OF INVENTION
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for displaying virtual images formed by illuminating with a lighting device.

A LCD having a particular arrangement of display pattern, wiring portion, transparent electrode and insulating layer.

A LCD having a line width of a wiring portion thicker according to the position, size of said display portion.

A LCD having a transparent member provided on a wiring portion and its method of manufacturing.